American Journal of Pharmacy

AND THE SCIENCES
SUPPORTING PUBLIC HEALTH

DR. IVOR GRIFFITH ON WFIL-TV'S
"UNIVERSITY OF THE AIR"

Since 1825 November 1952

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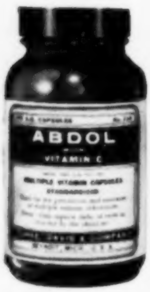

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AND THE SCIENCES SUPPORTING PUBLIC HEALTH

Since 1825

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CONTENTS

EDITORIAL

EDUCATION—FOR GOOD OR FOR EVIL?

NOWHERE, more than in America, are the facilities for mass education more abundantly available. Twenty-five or thirty years ago a radio was a prized possession owned by relatively few persons. Most of the early sets were built by amateur radio mechanics and were used largely to see how many and how distant stations could be catalogued. Today, a radio is such a common device that to be without one is more of a rarity in America than to be lacking a tooth brush. Radios in many homes exceed in number those living there, and we find radios in the living room, the kitchen, the bedroom and the bath. No one need be without a radio except by choice.

Owners of television receivers are multiplying rapidly, and millions each day see as well as hear those in the studio, on the athletic field or elsewhere. At the present time, at least, television is not available except within approximately a 60 mile radius of a station since these waves travel line of sight, and there is a practical limit to the height of antennae. In spite of this a growing proportion of our population has daily contact with television.

The impact of television on mass communication and public opinion is far greater than that of radio, as the recent political campaign so vividly showed. Seeing the speaker or viewing the act causes a far deeper impression than simply hearing sounds and words. For this same reason radio is rapidly giving way to television in most homes where both are available.

In the days of radio it was not too difficult to call at a friend's home and interrupt the program being heard. With television things have changed. The well-mannered visitor now must sit quietly until the current program ends if he wishes to be welcome. Children at times do not even acknowledge the intruder's presence and even fail to hear their parents' admonition to speak to the guest.

This monopolization of the home and its replacement of the usual social intercourse between family and friends is not without its disadvantages. Chief among these is that the immature mind is molded readily by the programs which transfix its total attention. While we

do not wish to be a Polyanna, some of the happenings on the TV screen make ordinary mayhem and murder seem dull indeed. While good usually triumphs over evil, the viewer is carried through all the intricate and sadistic details of the most gruesome acts imaginable. Close-ups of corpses, profuse hemorrhage, etc., are quite commonplace, and the most minute details of the perfect crime are unfolded before the entranced spectator. At the other extreme the TV audience is confronted with a steady parade of comedians who seemingly never have had a serious or worthy thought. The studio audience is prompted to laugh at each joke, and in the end laughter becomes a conditioned reflex even in the TV audience and even when the joke is not at all humorous.

There are some few excellent educational and cultural programs on TV as on radio, but these are not so frequent as they should be. Because of poor or no sponsorship they often come at times when the potential audience is small. While they do great good, it is doubtful if they succeed in undoing the harm done by some of the most popular programs. Herein lies a serious problem.

A TV station and TV programs cost a lot of money, and stations must have paying sponsors for their programs or suffer financial collapse. Sponsors are usually motivated by their advertising departments, and these in turn are motivated by sales. It is obvious, therefore, that only those programs which are very popular can obtain sponsors. To be popular a program must appeal not to the more educated and cultured members of society, but to those motivated only by the most basic and primitive emotions. While we do not believe in forced culture this present process will, if it continues, stifle the mental and moral growth of American youth and destroy in them that quest for understanding and beauty which raises man above the other animals on the earth.

Left strictly to their own devices and permitted to attend school or not as they wish, most children would never learn to read or write. To feed them radio or television programs founded solely on the basis of what they want is no different and it will have the same dire consequences.

Television sponsors in selecting programs would do well to recognize their long-term responsibilities and the eventual result to our system of free enterprise if this is not done. A debased and uncultured populace can be handled successfully only by a dictatorship, for

democracy presupposes both education and a moral outlook. Either free enterprise will support our public means of education and culture, or they will forever lose their chance to do so. A program of advertising calculated to bring the most immediate and tangible gains is not necessarily the best in the long run. A well-informed, cultured and moral populace is the best guarantee that American industry could have for its continued and successful future.

The drug industry is a heavy subscriber to television programs. May it not be said of us that while contributing to the physical well-being of Americans we sowed the seeds of moral and social decay.

L. F. TICE

CHLOROBUTANOL IN PARENTERAL SOLUTIONS *

By Louis Gershenfeld **

CHLOROBUTANOL (trichloro-tertiary-butyl alcohol) is compatible with a large number of chemicals and drugs and is used extensively as a bacteriostatic agent for parenteral solutions. It has an added advantage in that it exerts a local anesthetic action at the site of injection. In the literature we find that a saturated aqueous solution (0.8%) of chlorobutanol is designated as completely bacteriostatic, though specific references are not always given. In other instances, statements are found indicating that this substance is bacteriostatic at a concentration of 1:200, but here too specific references are not found. However, Briggs and Callow (1) indicate that chlorobutanol, 1:200, is bacteriostatic for non-spore formers; and Taub and Luckey (2) report that a 1:125 concentration of chlorobutanol killed *S. typhosa* in two minutes. It also has been reported that chlorobutanol has a phenol coefficient of 1.2.

Chlorobutanol decomposes at temperatures above 65° C. and at higher temperatures usually used during heat sterilization procedures. It also decomposes readily in alkaline solutions.

It was the purpose of this study to investigate the bacteriostatic activity of chlorobutanol against certain of the aerobic non-spore forming and different spore-forming organisms. It was also deemed advisable to determine if bacteriostatic concentrations are affected by sterilization temperatures, such as autoclaving at 121° C. for 20 minutes, heating at 100° C. for half-an-hour for three consecutive days, and heating at 65° C. for half-an-hour for three consecutive days.

Experimental

Chlorobutanol in various dilutions was tested against each of the following organisms: *E. coli, S. aureus* and *B. mesentericus* (vegetative forms), *B. megatherium* (vegetative forms) and *B. subtilis* (vegetative forms).

Suspensions of spores of *B. subtilis, B. mesentericus,* and *B. megatherium* were also used. The spores were harvested from 16

* Presented to the Scientific Section, A. Ph. A., Centennial Meeting, Philadelphia, August, 1952.

** Director, Department of Bacteriology, Philadelphia College of Pharmacy and Science.

month old F.D.A. agar cultures of the test organisms and suspended in isotonic saline solution. The suspensions were centrifuged, washed, and resuspended in isotonic saline. The spore concentrations of the suspensions were determined by a plating technic and diluted to 1,000,000 spores per ml.

A stock solution (1:200) of chlorobutanol was prepared by dissolving 5 Gm. of chlorobutanol in sufficient sterile nutrient broth to make 1000 ml. of solution. From this (1:200) stock solution, various dilutions were prepared, using nutrient broth as the diluent.

Tubes with 10 ml. of nutrient broth containing various dilutions of chlorobutanol were inoculated separately with 0.1 ml. of a 24 hour old culture of each of the five test organisms and separately with 0.1 ml. each of the (one million per ml.) respective three spore suspensions. All tests were conducted in triplicate.

These mixtures with each of the different bacteria and with each type of the different spores were incubated for 21 days at each of three temperatures: refrigerator temperature (4° C.), room temperature (24° C.), and body temperature (37.5° C.). At the end of the 3 week period, the tubes were observed for growth or absence of growth. All tubes which revealed absence of growth were again incubated, but at 37.5° C., for one week and then again observed for growth or absence of growth. All tubes revealing no growth at the end of this period were subcultured by inoculating 0.1 ml. of the contents in 10 ml. of sterile nutrient broth and these were incubated at 37° C. for 48 hours.

The concentrations of chlorobutanol employed were: 1:200; 1:225; 1:250; 1:275; 1:300; 1:325; 1:350; 1:375; 1:400; 1:450; 1:500; 1:550; 1:600; 1:650; 1:700; 1:750; 1:800; 1:900; 1:1000.

Dilutions of chlorobutanol nutrient broth which revealed antibacterial properties were submitted to sterilization temperatures; and pH readings of the dilutions were taken before and after sterilization. The sterilization processes employed were:

Autoclave—121° C. for 20 minutes;

Arnold Steam Sterilization—100° C. for 30 minutes for three consecutive days; and

A water bath at 65° to 70° C. for half-an-hour for three consecutive days.

The different sterilized batches were treated as above with the several test organisms and spore suspensions and the observations were recorded.

Results

In no instance, did chlorobutanol, in the dilutions used, display a bactericidal effect against the test organisms and spores. Chlorobutanol nutrient broth mixtures which revealed no growth (by macroscopic observation) yielded positive findings (growth) upon subculture.

Controls at the three storage temperatures were positive at all times. The findings varied with the different chlorobutanol nutrient broth mixtures at these temperatures depending upon the test organism, but growth appeared in most instances in concentrations of 1:400 or weaker. At 4° C., concentrations stronger than 1:400 (up to and including the 1:200) revealed no macroscopic growth. At 37° C. and at room temperature, growth was apparent in all dilutions except the 1:200 concentration. The latter dilution (1:200) therefore appears as the one to be regarded as the concentration displaying a bacteriostatic action under all conditions employed in this investigation (except when the final mixture is heat sterilized or heated).

Heat sterilization procedures resulted in a decomposition of the chlorobutanol. The findings indicating chlorobutanol decomposition revealed that autoclave temperatures, 121° C. for 20 minutes, decomposed the compound appreciably. The pH decrease ranged from 0.79 to 1.22 depending upon the concentration of chlorobutanol. Arnold steam sterilization, 100° C. for one-half hour for three consecutive days, had the greatest effect on decomposition, as revealed by the lowering of the pH. This decrease ranged from 1.16 to 1.68. Heating at 65° C. for half-hour for three consecutive days had the least effect on chlorobutanol decomposition; the pH decrease ranged from 0.10 to 0.26.

All heated solutions were inoculated as above. Growth was revealed in every instance including the heated 1:200 concentration mixture. Unheated 1:200 concentration mixtures, serving as controls, did not reveal the presence of growth, indicating that under these conditions this concentration displays bacteriostatic properties.

Summary and Conclusions

Chlorobutanol in dilutions of 1:200 to 1:1000 was tested for its antibacterial properties against broth cultures or aqueous suspensions of *E. coli*, *S. aureus*, *B. mesentericus* (vegetative), *B. megatherium* (vegetative), *B. subtilis* (vegetative), and spores of *B. megatherium*, *B. subtilis* and *B. mesentericus*.

Dilutions showing bacteriostasis were submitted to the following procedures: (a) Autoclave at 121° C. for 20 minutes; (b) Arnold steam sterilization (100° C.) for 30 minutes for three consecutive days; and (c) heating at 65° C. for thirty minutes for three consecutive days. The pH readings of the dilutions were recorded before and after all heating procedures to indicate the extent of chlorobutanol decomposition. Dilutions, which were bacteriostatic before being heated, were inoculated with the test organisms and spores to determine any change in bacteriostatic properties of chlorobutanol due to the heating procedures employed.

A concentration of 0.5% (1:200) chlorobutanol displayed bacteriostatic properties against non-spore forming and spore-forming bacteria in broth cultures or aqueous suspensions. Concentrations of 1:400 and weaker were ineffective. Dilutions ranging between 1:200 and 1:400 of chlorobutanol gave variable results.

After heat processing, using the usual sterilization temperatures, all dilutions failed to show bacteriostatic properties against each of the test organisms and spores. Each of the three sterilization processes investigated lowered the pH values of the chlorobutanol dilutions. This lowering of the pH indicated decomposition of the chlorobutanol, and was most pronounced with Arnold steam sterilization at 100° C. for one-half-hour for three consecutive days and least pronounced at 65° C. heating for one-half-hour for three consecutive days.

Acknowledgment

These investigations were conducted over the past few years employing different strains of the test organisms. Different workers aided as technical assistants. Appreciation for this is extended to Robert A. Mansfield, Morton A. Mallin and to Harold Bell.

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AN EXPERIENCE IN PRESENTING POPULAR SCIENCE THROUGH TELEVISION

By John E. Kramer *

EDUCATIONAL programs on television are increasing in number. There are several nation-wide presentations that have engaged the fancy of the public and are not only enjoying great popularity but are rendering a distinct service, for children and adults are learning through skillful entertainment.

On the local level, many cities have well-defined educational programs under competent administration and these exert great influence. In fact, the Federal Communications Commission has recently decided to allot 242 of the newer television channels for non-commercial educational purposes only.

In Philadelphia for thirty weeks during the normal school season, Station WFIL-TV, on Channel 6, devotes 50 minutes a morning, Monday through Friday, to educational programs under the general title of the WFIL-TV University of the Air. Each morning period is divided into two parts, one of twenty minutes and one of thirty minutes, and various colleges and universities in and near Philadelphia assume the responsibility of supplying speakers for the several time segments. Subjects range through literature, music, floriculture, languages, history and several aspects of science.

The faculty of the Philadelphia College of Pharmacy and Science was privileged to participate in the second semester of the 1951-52 term of this University of the Air, and by this means was able to bring to the general public splendid points in public health and some very fine public relations work for pharmacy was accomplished. Response was excellent and the entire project was deemed quite worthwhile to all who cooperated in the work.

Following are the titles of the lectures and lecturers, in the order in which they were given, and the salient points of information in each talk. Scripts were not used, as reading from script detracts from television effectiveness. The lectures were enhanced through demonstration material and experiments. In some cases experimental animals were shown.

* Registrar and Assistant to the President, Philadelphia College of Pharmacy and Science.

EXPANDING HORIZONS IN PUBLIC HEALTH AND COMFORT

By Dr. Ivor Griffith
President and Research Director

The title of this lecture embraced the theme of the entire series. In it, the lecturer explained the great rise in life-expectancy during the last half-century because of progress in the medical sciences. The sulfonamides, the antibiotics and other modern medicaments were credited for the better general health picture of today, and the pharmacist was given full due for his part in the development and use of these new drugs.

Now there is a tremendous growth in the aged population, with the future sure to see even a larger number of old people. And with this increase comes a challenge to all, young and old—pension plans, social security, and a concentrated effort on the part of younger people to learn how to plan for retirement. It was even suggested that definite formal schooling be instituted toward this end.

In summary, each member of the audience was warned to "behave yourself, its earlier than you think."

BATTLING OUR BACTERIAL INVADERS

By Dr. Louis Gershenfeld
Director of the Department of Bacteriology

Introductory statements in this lecture reviewed the role of disease as the potent factor in warfare of old—bubonic plague, typhus, dysentery, typhoid fever and other diseases caused by bacterial invaders having decided more battles than bullets or the older forms of armament. The causes of disease were discussed, with greatest stress being placed on those of bacterial origin. The various common disease-producing bacteria were named, as were viruses, and their differences explained.

Epidemics of disease, and endemic and pandemic conditions were defined, and the value of quarantine and the various functions of the Board of Health were explained. Treatment of disease, immunization and preventive medicine came under careful survey by the lecturer.

It just so happened that an epidemic of measles was current in the area at the time of this telecast, and many facts concerning this specific disease were explained.

CLEAN WATER—MAINSTAY OF PUBLIC HEALTH

By Dr. Arthur Osol

Director of the Department of Chemistry

The subject of drinking water is one of constant interest to residents of Philadelphia. The close relationship between clean water and public health was explained, and the evolution of the typical municipal water system was outlined. Reasons were given for the use of chlorine in treating water. Fluoridation was discussed at some length, and figures were quoted concerning its current use in 60 cities. The uses of iodine in purifying water were related.

Harmful chemicals that may appear in water supplies were named, as were other problems in water pollution. Decreasing availability of water for municipal use, industrial and domestic consumption statistics, and the tremendous problem of waste disposal followed in that order as points of interest in the lecture.

CHLOROPHYLL—WHAT IS IT?

By Professor Edmund H. MacLaughlin

Associate Professor in Biology and Pharmacognosy

After an explanation of the derivation of the word chlorophyll, the lecturer outlined its many uses and abuses, as currently in the public eye. Then followed a clear and detailed explanation of the source of this substance, its chemical composition, and how nature and man combine their efforts to make this useful product available for research and for medicinal, household and commercial purposes.

HEALTHIER AND MORE COMFORTABLE HOMES

By Professor Robert N. Jones

Director of the Department of Mathematics and Physics

The correlation between the condition of the air in the home and the comfort of the home was the principal subject for discussion. The physical properties of air—temperature, humidity, dust, pollen and other allergen content; bacterial content, pressure, purity and odor were considered, and with each the latest efforts by workers in science to make such conditions in the home ideal. Further correlation between such home comforts and the health of both human and animal inhabitants were indicated.

MEDICINES FOR INJECTION

By Professor Linwood F. Tice

Assistant Dean and Director of the Department of Pharmacy

The widespread use of medicines by injection was stressed at the outset of the lecture, and the reasons given for the preference and, in some cases, the necessity of choosing this method of administration over other available methods. Following an explanation of the several dangers that may be encountered in the injection of certain drugs, their dosages and methods of administration, and how solutions for injection must have special properties, the lecturer described in detail the various steps taken in producing and testing safe, sterile products. Stress was placed upon the fact that the American pharmaceutical manufacturer and the American pharmacist are doing a wonderful work in this respect, better than has ever been done before in the history of man.

Prof. Linwood F. Tice showing specimen to television audience.

SAFE AND SANE COSMETICS

By Dr. Joseph W. E. Harrisson

Director of the Laboratory of Pharmacology

To discount the belief that cosmetics are used only by a few, this lecture commence with a resumé of the great number of products that can be considered cosmetics, used by males just as much as by females, and practically from birth to death. After a review of the older forms of simple cosmetics, the changes that have occurred in this field in the past few years were cited. New chemicals used, new products, and other improvements were mentioned.

But with each change, the safety of the user is concerned. Dermatitis, systemic toxicity, even blindness may result, if wise formulation is not followed. How the scientists make the tests for purity, and how all new products must meet rigid specifications gave assurance to the listeners that their safety is being safeguarded very carefully.

SCIENCE MAKES THE ROADS SAFER

By Professor Robert N. Jones

Director of the Department of Mathematics and Physics

In this lecture, the listeners were impressed with the fact that the automobile, while basically a pleasure vehicle, a convenience and a useful servant, may, under certain circumstances, be a very dangerous weapon. Every motorist, to be a good motorist, should realize that a car cannot stop itself, but must be stopped by the road. Braking space must be correlated with speed. Skidding may be controlled scientifically. The laws of mass, kinetic energy and friction are as important to every driver as are the rules of the road. With charts and figures, the elements of safe and sane driving were exhibited.

THE FOUR ELEMENTS OF THE GREEKS

By Dr. Ivor Griffith

President and Research Director

The Greek philosophers resolved everything to four elements—air, earth, fire and water. Each was discussed in detail by the lecturer. Air, and light, were shown to be necessary to plant and ani-

mal life, and the health and comfort of humans depend on clean air, thus making today's air pollution a major problem.

Earth is man's main food producer, the storehouse of life, beset now with problems of soil erosion and chemical deficiencies.

Fire and warmth are necessary to man's health and comfort.

Water is man's greatest component part. He is born in water, he lives with water, and after he dies, as a molecular ship, he returns to solution again. Clean water is a necessity to the continuation of life.

HOUSEHOLD INSECT PESTS

By Dr. Louis Gershenfeld

Director of the Department of Bacteriology

The common household insect pests, such as ants, bedbugs, carpet beetles, cockroaches, fleas, flies, mosquitoes and moths were discussed in detail, their principal characteristics outlined, and the methods of destroying them shown. At all times the lecturer stressed the fact that not only are these pests annoying, but many are capable of spreading disease. Thus, their destruction is not only a matter of comfort but important to the protection of public health.

RADIOISOTOPES SOLVE SOME PUBLIC HEALTH PROBLEMS

By Dr. Arthur Osol

Director of the Department of Chemistry

After defining a radioisotope, and how one is produced, the lecturer talked about such substances as radiophosphorus, radioiodine and radiogold. The use of a Geiger-Müller instrument was demonstrated. Then followed a description of the use of these radioisotopes as tracer substances in medical research, and their value in the determination of the volume of blood in an individual.

The use of bacteria, flies or mosquitoes containing radioactive tracer substances in seeking the methods in which those organisms cause or spread disease made a very interesting portion of the lecture. Other uses of radioisotopes were touched upon briefly, but the general tone of the talk was such as to impress the listener with the fact that these salutary and beneficial by-products of the world-wide atomic energy program will do much to negate the evil of the atomic bomb.

EMULSIONS IN HEALTH AND DISEASE

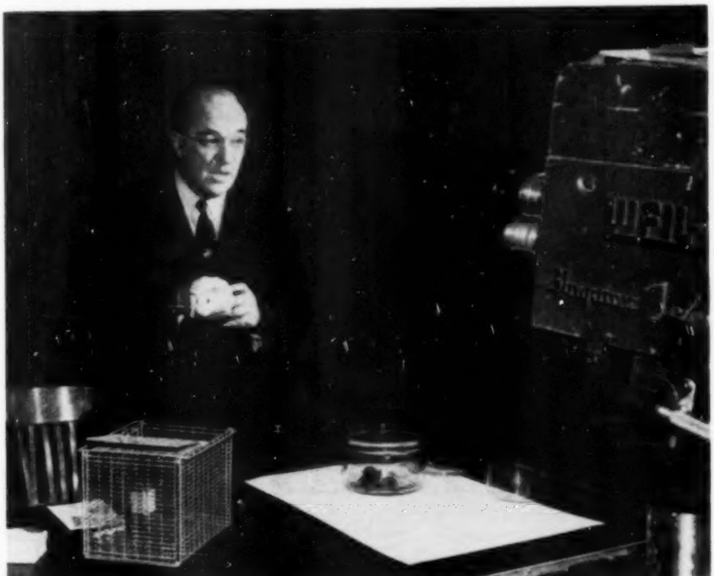
By Professor Harvey P. Frank
Associate Professor in Pharmacy

The task of mixing oil and water, a problem common to the pharmacist and the layman alike, was discussed in detail by the lecturer. Starting with milk, a natural emulsion, the making of other emulsions was demonstrated, the use of proper technic and the appropriate chemicals being accentuated. Emulsions in every-day life, as well as pharmaceutical emulsions, received adequate consideration.

IMPROVING NATURE'S FOOD WITH SAFETY

By Dr. Joseph W. E. Harrisson
Director of the Laboratory of Pharmacology

After a review of the diversity of substances used by various races of peoples as food, the composition of a food was considered.



Dr. Joseph W. E. Harrisson showing experimental animal.

However, all foods, as provided by nature, are not always able to meet public demand for convenience, appearance, stability and economy. Consequently, man has improved upon nature, and with safety, thanks to the scientist. Frozen foods, wrapped foods, foods with more inviting colors, better texture, greater stability and greater palatability were discussed. Animals were shown that are used in testing the safety of these improvements. And throughout the lecture emphasis, was placed upon the care and supervision now being exercised to protect the eating public and to insure safe products.

POISON IVY AND IVY POISON

By Dr. Marin S. Dunn

Director of the Department of Biology

This subject covered two telecast periods and was quite timely, the dates of delivery being May 6 and 13. After telling the geographic distribution of poison ivy and similar harmful plants, charts were shown so that the viewers might visualize and thus be better able to avoid these plants during the coming summer months.

What ivy poison looks like, and various preventive and remedial measures were described. Elimination of the plant, and methods of avoiding poison ivy were stressed more than the treatment of ivy poison, for unless the case be relatively light, medical supervision is indicated.

"TECHNOLOGY—HOPE OR HOBGOBLIN?" *

By Henry B. du Pont **

FIFTY years from now, shortly after the year 2000, it is probable—in fact, it is inevitable—that scholars will be recording for posterity the story of the Twentieth Century. Possibly some young man now on the campus of one of the universities represented here—perhaps some junior member of your history or economics department will be undertaking that assignment. Looking over this audience, I would guess that only a minority of us here tonight may qualify personally for the task, for we will all be among the more elderly by then, and the job will call for youth and enthusiasm. Yet, there is no telling what science may produce in the cause of longevity in the years ahead.

But in any case, the story will be written, and it will be a fabulous story. It is interesting to speculate as to just what this future historian will have to say of this mid-century period. He will have available to him such records, such detail, as no predecessor has ever enjoyed. At this stage of the previous century there were no cameras, no Linotype machines, no speech recording devices, none of the vast machinery of communication that now permits us to seek understanding with one another. He will know how we looked—in full color. He will know the sound of our voices, faithfully reproduced. He will have a mountainous file of documents in which we have tried to express our thoughts, our fears and our aspirations. With these splendid facilities, he should be able to interpret our times with complete understanding. Unfortunately, our use of them to achieve understanding among ourselves has not been quite so successful.

For the fact is that we find ourselves, in this middle-ground of our century, in a confused and bewildered state. We can, if we wish, pick up our telephone and call a man in Cairo or Rome and say, "Joe, let me tell you how I feel about this." Or we may beam our radio across the world, in a dozen languages, or air mail a can of

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* Presented before the Divisional Meeting Association of Land-Grant Colleges and Universities, Washington, D. C., November 11, 1952.

** Vice-President E. I. du Pont de Nemours & Company.

Technicolor film to the most remote village. But even as we do this, we may not even be able to have a meeting of minds with the man next door.

With the finest and most complex system of communication ever devised, we have in all too many cases succeeded in achieving little real understanding among ourselves. We see little but suspicion, distrust and jealousy elsewhere in the world.

Lack of understanding between people and nations has become the most critical problem we face in the world today. It is the prime basis of our present international tensions. It represents a threat to our national security, both economic and military. It is at the root of our labor-management dissensions. And it exists even in the one place which offers the most promise of clarification, the university campus.

In the 50 years since America entered its most highly technical era, education has undergone much change. From my own point of view, I have seen it from both sides of the desk, as it were, both as a trustee of a state university and as an executive of a corporation which hires large numbers of technical graduates each year. Over the last five years, for example, we have engaged more than 6500, representing hundreds of different colleges and universities. The demand has been for larger and larger educational facilities in science and engineering. The universities have responded magnificently to this need. They have trained a growing number of students and trained them well. They have undertaken an increasing number of research assignments, for their own account and for the account of industry. The part played by the university both in basic education and in research has been invaluable.

But as more and more students began choosing technical careers and more and more additions were made to technical school facilities, the university came to be divided into two major groups. On the one side were those in the technical field, with their emphasis on tangible, measurable quantities. On the other were those in the humanities and social sciences, with their viewpoint centering on ethical and cultural standards. As each group became more preoccupied with its own specialty, it came to have less contact with and less understanding of the other.

The technologist has often been charged with having too narrow a view and little appreciation of social considerations. Now, how

valid this contention is I do not pretend to know. Apparently educators have at least recognized the possibility, for there is a definite trend toward broadening the educational background of the scientist and the engineer. I know that Massachusetts Institute of Technology, where I studied engineering, has enlarged its curriculum so that students in the technical fields would be exposed also to more economics, history, sociology and so forth. I understand that some colleges have even extended their engineering courses to five years to accomplish this purpose, and that most university engineering schools require a certain minimum of social and classical credits.

But how broad a view do the social scientists have with respect to technical developments? My observation is that the technical considerations and the part that technology plays in our lives are frequently overlooked. Both the technician and the social scientist are, of course, seeking the same goal—a strong, productive and prosperous society. The difference that often exists is in the means required to achieve this objective. Here there are diffrences in outlook and viewpoint. It would seem that in many respects the divergent philosophies of the world at large are often represented in miniature on the college campus.

Productive technology is one of the greatest developments of the modern age. It has been both the engineer of change and the social scientist of reform. It has created material comforts and conveniences beyond the wildest dreams of a century ago. It has lifted the burdens which once bound men to the soil and made them old before their time. It has opened new opportunities of leisure and cultural development to millions.

But the great paradox of the Twentieth Century is that despite this progress, we still find ourselves uneasy, dissatisfied, uncertain of the future. We have found a peace that is not peaceful, a security that is not secure. We face grave and difficult problems in many parts of the world. We have large debts and a heavy burden of taxation. To defend ourselves we must maintain a large military establishment, with the sacrifice that entails disruption of lives and careers.

Many reasons are advanced for this unhappy state. Some attribute it to a spiritual breakdown, to preoccupation with material ends. Some feel that the rate of technological progress has been too rapid—that the race was bred for centuries to perform hard manual labor and has not yet accustomed itself to tending machines and set-

ting thermostats. Some lay the fault to capital, some to labor, some to government.

Perhaps some or all of these viewpoints have a degree of merit. But underlying each of them is a basic and very real misunderstanding—misunderstanding of the role of technology in modern life. And because of this misunderstanding there is suspicion, and fear. Fear of the machine, fear of change and fear that a few large corporations could, through their technology, dominate our whole economy.

These fears and conflicts arise directly from our technological progress. In the days when we had mainly an agricultural economy, a man could see and depend on the results of his own labor. The same was true of our early artisans, owning their own simple tools. But today the tools of industry are so complex and expensive that no one man can furnish the funds to provide them or supply the many specialized skills and talents necessary for their operation. In our company, for example, the investment works out to something like $18,000 per employee, and the plant in which he works may cost as much as $100,000,000. We have 140,000 stockholders, and we employ hundreds of different types of specialists and technicians. So today the worker is dependent for his well-being on the cooperative efforts of many people whom he seldom sees and doesn't know—and is therefore likely to misunderstand and distrust.

Today we see evidences of this lack of understanding, this fear, in all parts of the world. We say that communism is the greatest peril to our own security. But communism is literally an expression of this same fear, for Karl Marx saw, mistakenly, in the machines which created the Industrial Revolution, a threat to the livelihood of the people. Modern followers of Marx should know better, for events have proved their prophet the worst forecaster in history. But the fears, and the misunderstandings, still persist.

They persist in the attitude of those labor groups which profess to believe that less output per man will somehow produce an economic benefit. The resistance of the British trade unions to mechanization of the coal mines is a ready example, one which helped reduce the powerful United Kingdom to its present one-egg-a-week routine.

The facts of life in the field of technology are little understood—particularly the ways in which modern technical processes are brought into being and their products made available to the public. Tech-

nology can benefit no one when it remains in a vacuum. A technical development may have its beginning in a laboratory, perhaps a college laboratory. But it will benefit mankind only when it serves some useful purpose. This requires a financial risk, to build the facilities that will produce on a scale large enough to achieve low cost and wide distribution. Thus in this country the fruits of technological progress reach the public through the medium of American industry. So when we say American technology we are saying American industry—the two are almost synonymous. To praise technology and condemn industry—and there are those who manage to perform this odd twist of logic—is like favoring education but condemning the university.

Fears and misunderstanding of technology are reflected today in many government attitudes toward industrial development. This is particularly true in such areas as the anti-trust field, and in tax legislation. There is a tendency to regard bigness with distrust, regardless of the fact that much of today's technology requires huge resources of capital and organization.

For example, our new plant for making "Dacron" polyester fiber will represent an investment of about $40,000,000. Its equipment is most complex and highly specialized. When it begins operations it will climax a research and development program going back nearly 20 years and requiring the team effort of dozens of different types of technicians. Obviously, this was a task which could be done only by a firm having large resources. To contend, as some do, that the size of a corporation should be limited, is to argue that the public should not be permitted to benefit from such technology.

Then, too, in devising tax plans there is frequently the tendency to penalize growth. The present corporate income tax, along with the so-called "excess profits" tax, for instance, goes up to a rate of 82 per cent of earnings in excess of a certain base amount. Such a penalty is making it difficult for both large and small corporations to accumulate out of earnings the funds required for new technical advances. Thus, at a time when industrial technology should be encouraged in the interest of national security, it is being slowed down by these restraints.

The effect of technology on competition is another subject that is often confused. One of the standard bogymen is the fear that advancing technology creates monopolies and leads to greater concentration within industries. Competition, in the classic definition, means

rivalry within a given industry—where one coal company competes directly with another, or one store with the store across the street—the Macy-versus-Gimbel type of competition. Our present anti-trust laws were designed originally to prevent any firm from gaining a monopoly within its own field. But today there is an entirely new kind of competition. There is the competition from a steadily increasing number of products, processes and materials in different industries that compete with each other.

Steel is challenged by other metals, by plastics and plywood; glass by paper, tin and cellophane; cellophane by foil, paper, and rubber; cotton cloth by rayon; coal by oil; oil by gas; the railroads by the trucks. Interchange of ingredients is much more evident, so that one given raw material is seldom indispensable for a given finished product. Plastics, for example, can be made from cotton cellulose, from wood pulp, from coal, from natural gas, from milk, or even from peanuts. Technology has set up a whole new set of conditions, but many of the old misconceptions about competition and monopoly remain as painfully out of date as high button shoes.

As a matter of fact, industry is growing more competitive and not less. Concentration, that is, the share of the total production of a commodity by the leading producer or producers, is becoming less prevalent, not more. A recent analysis lists 50 industries in which the leader does a smaller percentage of the business than was the case 50 years ago. It includes such a cross-section of the economy as sugar, iron and steel, tobacco, leather, explosives, biscuits and petroleum.

One place in which unrealistic thinking has become extremely apparent is in the preparation of classroom textbooks, notably in the field of economics and social history. Some authors assume great authority about industry, although their experience in the field may be extremely limited. Many of the texts that I have encountered seem to draw their conclusions by weighing only one side of the story. Some, for example, express great concern for "inequalities in the distribution of income." One, I recall in particular, advocates a system of taxation approaching complete confiscation of upper-level income, even in peacetime. There is no suggestion of how this course would affect new investment or how it would restrict a growth and development of industry. There is no recognition of the historical truth that success on the part of one individual brings success to many indi-

viduals. In the concern for equality of reward, many writers neglect to show that the American living standard has resulted from increasing the total output, rather than from redistributing what we have.

Many textbooks sin more in what they leave unsaid than in what they say. One I read recently goes like this: "Individualism . . . was *ruthless* in its destruction of the weak. The story of American 'big business' is one of *ruthless* cut-throat tactics." Perhaps in some cases this criticism may have been justified, back in the early era of our industrial development, but the author chooses to look only at the minus side. He has little to say about the individualism that developed and produced an unparalleled volume of goods and services, and which brought our technology to its present state.

Another book widely used in the colleges has this to say: "Giant industries have grown up and in most sectors of the economy small firms are no longer very important." Now certainly this viewpoint denies many vital facts. The author neglects to point out that a high degree of integration and large production facilities are necessary to place some products in reach of the public. I do not like to think how much a Ford or Chevrolet or many other popular makes of car might cost if made by dozens of small companies. There would be more bicycles than cars in a factory parking lot.

And the author ignores the fact that no big company can exist without many small firms for suppliers and customers. Our Company is, I suppose, one of the "giants" the author has in mind, but we find "small firms" mighty important. If it were not for thousands of these "small firms" we would be out of business, for they represent our principal customers and suppliers. Few of them would have the resources to make nylon yarn, but few "giant industries" could make, market and merchandise nylon hosiery any better than the small firms. If this economist is the friend of little business, as he seems to profess, he does not honor them by minimizing their importance.

Again and again textbooks reveal their failure to understand the contributions of technology to social gains. For example, one book rather widely used in the schools shows a picture of a small child at work in a textile mill, with the comment that "this was common practice until the law stepped into prohibit it." Now presumably the author believes that if the law should relent, the employment of children in industry would quickly resume.

But in the long run it was technology, not law, that led to the end of child labor. As we learned how to make our machinery produce more effectively, heads of families could earn enough to keep the kids in school, where they belong, rather than in putting them to work to augment the household income. And employers saw far more possibilities for increasing their output through better equipment and better methods than by keeping wages down. A well-paid operator and a modern productive machine are much better economics than a sleepy child and an outmoded factory.

I would like to see these writers and teachers spend some time with a modern industrial organization, or at least spend some time with those of their colleagues who have. I do not by any means imply that professors of the social sciences are radicals or that they are not entitled to their own opinions. But I do feel that many of them base their convictions on insufficient and sometimes distorted information. If technology is going to stop being a hobgoblin and become, as it should be, the hope of our future, we need to recognize how it functions.

There have been times in the past when fears were expressed that widespread unemployment would result from technological advances. But today few are deluded by the myth that technology will make displaced persons of our industrial population. If the buggy whip and the livery stable have become extinct, they cannot be mourned by a society that employs 12,000,000 people to make and service the automobile. Today, after the most intensive technological program in history, we have the largest employment force in history.

Yet occasionally there have been those who actually called for a moratorium on research and invention. You will recall that such outcries were popular during the Thirties. But let us suppose that all research and development had somehow been halted arbitrarily at some given point in history. Without tractors and machinery and chemical fertilizers our farms could not have supported our growing population, and soon we would have stagnated into a nation of paupers and peasants, like India or China, always at the edge of famine. With our food problem solved, people were able to turn their attention to other activities. It is estimated that fully half of the American working population now earns its living producing things unknown in 1902. And even since 1930 we have seen huge gains in employment opportunities—to indicate the fields that new technology has opened

we need only to mention such things as air-conditioning, television, synthetic fibers, home freezers, and frozen foods.

It is quite true that technology creates problems. No one denies that. And obviously it creates change, like nothing else. It is the greatest revolutionary in history, for it has had a more profound effect upon social custom and social reform than any legislation or any code of law. Let me cite just one example.

A hundred years ago, the average American workman had a few simple hand tools and for power he was limited to his own muscles, plus the help of domestic animals and water wheels. He worked from the time he was through with his elementary schooling until he died. Assuming that he survived for the Biblical three-score-years-and-ten, he probably spent a total of 56 years on the job, 72 hours a week, 52 weeks a year. Add this up, it comes to something like 180,500 hours of his life.

The average workman today, with modern machinery and equipment, probably works from the age of 19 to the age of 65, or 46 years. He works only 40 hours a week, and has at least two weeks vacation. When you total this, you find he works over his productive life less than 90,000 hours—or about *half* of the time put in by the 1852 worker, and he performs his duties in greater ease, safety and comfort.

The reason, of course, is advancing technology. It has been estimated that every horsepower of mechanical or electrical or chemical energy put at his disposal multiplied his own efforts 22 times. He doesn't work shorter hours because some benevolent law permits it. He works less hours only because with modern machinery he can outproduce his grandfather many times over.

There has also been a remarkable readjustment of the American workman's living pattern. Fifty years ago, the difference in living standards between the wage-roll man and the manager or owner of a plant was very great. They lived in different neighborhoods, wore different kinds of clothes and had a widely different degree of comforts and diversions.

This picture has changed completely. There may be a difference in income between the workman and his boss, but the difference in their living patterns is small. Each drives to work in a comfortable, dependable automobile—the difference between them is only one of degree. One may drive a Chevrolet, one a Buick—both can and do

travel well. Either may spend his vacation in Florida or in traveling through the Rockies. Their homes may differ in size; they differ little in comforts for the family—both have automatic heating units and modern equipment of all kinds in the laundry, the kitchen and the bathroom. Their own clothing and that of their wives suffer little by comparison. Both see the same TV programs on the same kind of set, attend the same concerts, art galleries and theaters. This is the only country in the world where this situation exists.

Technology is everybody's rich uncle. But the benefactions of this generous relative will continue only so long as he is alive and healthy; when he dies he takes it with him.

It seems to me if technology should be developed throughout the world to a point approaching our own, many of the causes of conflict between peoples would disappear. There is no doubt in my mind that if the Russian people, for example, knew the facts about what an applied technical program could do for them they would soon deal appropriately with the leaders who stand in the way. There is no doubt that technology could produce in most countries of the world a standard of living quite comparable to our own.

But it could be done, of course, only by adopting the same conditions that have kept our technology alive and progressive—the atmosphere of free development, the incentives that make it grow. By this, of course, I mean the incentives for the inventor to invent, the investor to invest, the manager to manage, the worker to work.

It seems to me that the colleges can perform a great service in helping to dispel the confusion that exists about technological development. Perhaps one way to do so is to widen the base of both the scientific and liberal arts curricula. I would not think it amiss, in this technical age, to require each of our students in the arts and social sciences to have some background of technical study as well—at least enough to understand our dependency on technical advances. I would urge that this be as much a part of his educational equipment as for the engineer to have some background of literature and the humanities. To misjudge technology, the most significant force of the age, is to turn our backs on the future.

On every campus, there is the opportunity for everyone, faculty and student, engineer and social scientist, to broaden his own thinking by exploring that of his own associates. The schools of science and engineering must not overlook the liberal arts viewpoint through

which we learn to evaluate the human aspects of our civilization. Those in the fields of history, sociology, economics and political science must have a basic understanding and an appreciation of the part advancing technology has played and is playing in the development of the nation.

I believe in academic freedom. I do not question the right of teachers to express their personal opinions or draw their own conclusions from any given set of facts. I believe in letting our youth hear both sides of any issue, and I will trust their decision. I would like to be sure, however, that all the facts are available. I don't like to see judgments formed on incomplete evidence, either by those being taught or those who are teaching.

One of the great responsibilities of university administration and teachers today is to make certain that all aspects of every issue receive a fair and thorough hearing. The very concept of the university is that of an institution in which various viewpoints can be consolidated and unified in the interest of complete understanding. We need very badly to keep this basic concept firmly before us. At this critical time of history, we need all the leadership and all the sound judgment that the American university world can provide.

A SODIUM CARBOXYMETHYLCELLULOSE, WATER AND GLYCERIN MIXTURE AS A NEW OINTMENT BASE

By O. N. Yalçindag *

SODIUM carboxymethylcellulose is a white, granular, odorless and tasteless powder, which is soluble in water. It is known as cellulose gum, sodium cellulose glycolate, carboxymethocel, collocel and CMC. It has been suggested as a substitute for gelatin, glue, agar, tragacanth, acacia and cherry gum as an emulsifying agent for O/W emulsions (1).

Sodium CMC mucilage after standing two weeks shows no signs of decomposition (2). On laboratory animals (white rats, guinea pigs and dogs) CMC was found to be non-toxic (3).

There are four viscosity types of carboxymethylcellulose: (Low, Medium, high and extra high). The high viscosity type is generally used as a thickening agent and the low viscosity as an adhesive or binding agent (4, 5).

The purpose of this investigation was to find the best formula containing CMC, glycerol and water to provide a satisfactory ointment base.

Experimental

Different ratios of CMC, water and glycerin were tested. The best formula found was:

CMC High viscosity type	2 Gm.
Distilled water	18 Gm.
Glycerin (Sp. Gr. 1.26)	80 Gm.

Mix some of the glycerin (about 20 percent of the entire amount) with the CMC in a mortar, add some water, mix well and add and mix slowly the balance of the water. It is advisable to let stand a few hours and then mix with the balance of the glycerin.

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A homogenous and soft petrolatum like consistency is produced. It is odorless, but has a sweet and unpleasant taste. It absorbs 6.79 percent water vapor in 26 days if exposed to the air. After such water absorption, it does not lose its consistency.

At —5°C. it does not lose its consistency but at 50°C. it softens somewhat.

To outline the usefulness of the mixture as an ointment base, the properties that should be present in an ideal ointment base are listed. They are:

1—Good stability
2—Chemically inert
3—Proper consistency
4—Proper melting point
5—Uniform composition
6—Good water absorption and release
7—Good absorbability
8—No harmful action on application to the surface.
9—Easily washable
10—Proper pH (6—6.5)

Observations Using New Base

1—The new base was examined 6 months after its preparation and it showed no decomposition. At the same time, a potassium iodide ointment prepared demonstrated no color change.

2—The new ointment base was used to prepare some of the ointments of Turkish Pharmacopeia 1940. No change in any of these was observed.

The ointments prepared with the base were:

Unguentum acidi borici
Unguentum antipsoricum
Unguentum argenti colloidalis
Unguentum belladonnae
Unguentum hydrargyri oxidi rubri
Unguentum kalii iodidi cum iodo
Unguentum sulfuratum
Unguentum zinci oxidi

3—The consistency of the new ointment base was determined by the method given by R. Schlumpf (6) with the following results:

Glass stick: length 27.7 cm. Weight 50.00 cm.
Diameter 9.5 mm.

	Glass stick penetration into the bases mm.
temp. 23°C.	
White petrolatum:	44 mm. average
New Base .....:	45 mm. "

4—The base does not have a sharp melting point but softens after 50°C. It is therefore convenient in the hot climates.

5—An absorbability test as given by L. Middendorf (7) indicate the following results:

Ointment base	After 10 minutes massage per cent recovered from the skin
Lanolin	59, 61, 50
Eucerine with 100% water	39, 41
Petrolatum	88, 92
New base	50, 52

6—The new base is not harmful to the skin. It is washable and it has a desirable pH.

Summary

1. A new ointment base consisting essentially of CMC high viscosity type, water and glycerin is reported.

2. This base has been substituted for the bases of certain official (Turkish) ointments.

3. Ointments made with the new base are soft, easily spread, and easily compounded with other substances.

4. The base is easily prepared by the prescription pharmacist. It is recommended that this base be studied by official revision committees.

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SELECTED ABSTRACTS

The Hypnotic Effect of Dormison in Children. Malone, H. J., Klimkiewicz, G. R. and Gribetz, H. J. *J. Pediat.* *41*:153 (1952). Thirty tuberculosis patients, children from 1to 12 years of age, were studied over a period of 4 months with regard to the hypnotic effect of Dormison (3-methyl-pentyne-ol-3). Dormison was used in an attempt to control restlessness since rest is so important in the treatment of tuberculosis.

The dosage employed ranged from 50 to 500 mg., but the optimal hypnotic dose appeared to be from 150 to 200 mg. It appeared that doses as high as 500 mg. induced increased activity rather than sleep. No relationship was found between dosage and age. The drug was given in the form of an elixir. A placebo was substituted for the drug to prove that Dormison had true hypnotic activity.

A number of the patients established a sleep pattern after the use of the drug for a period of about one month, permitting the withdrawal of the drug. The hypnotic effects from the drug were more evident at bedtime than during the day, although sedative effects were evident during the day.

There was no deviation from the normal neurological pattern in any of the patients. There was a marked absence of mental stupor, headache and dizziness. Blood and urine studies showed no evidence of toxicity.

During the four-month period of this study there was an average weight gain of 2.1 pounds for the treated patients and 1.0 pounds for the control group. The authors attributed this effect to the relief from tension and wakefulness and to the sounder sleep enjoyed by the children receiving Dormison.

Cortisone in the Treatment of Friedlander's Pneumonia. Perkins, E. K. and Turpin, J. T. *U. S. A. F. Med. J. 3*:1363 (1952). Because experimental studies have shown that animals deprived of the adrenal glands have less resistance to infections than animals having these glands, it has been suspected that the adrenal cortex plays a role in the body's defense against infections. Therefore, it has also been felt that cortisone might play a beneficial supportive role in the treatment of infections.

A patient with proven Friedlander's pneumonia failed to respond to therapy with intravenous sulfadiazine and intramuscular penicillin. After 8 hours of therapy the patient had become rapidly unresponsive and moribund. His W. B. C. was down to 3800. At this point the patient was given 50 mg. of cortisone intramuscularly twice a day for 2 days, in addition to the other therapy. Within 4 hours after the administration of the cortisone the patient had responded dramatically. The respiratory rate and temperature had fallen appreciably and the patient was more responsive. The next day the temperature and respiratory rate had fallen nearly to normal and the patient began to cough up thick, bloody sputum. Definite indications of consolidation in the lung developed. The patient was also able to take fluids by mouth.

The sulfadiazine and penicillin dosage was decreased but continued for an additional 8 days. The patient continued to improve and was subsequently discharged, completely cured.

Carotenaemia in Two Adults. McConaghey, R. M. S. *The Lancet 263*:714 (1952). Two adult women complaining of lethargy and nervousness and showing a yellow pigmentation of the skin, particularly the soles of the feet and the palms of the hands, were found to have carotenaemia. They both had an insatiable desire for carrots.

The author pointed out that the importance of carotenaemia lies in its differential diagnosis from such conditions as gall stones, jaundice, pernicious anemia, and hemolytic anemia. The key to the diagnosis of carotenaemia is that the sclera are white. The urine was found to be no darker than normal. A simple test for lipochrome, carotene being the principle lipochrome in the human serum, was suggested by the author. Equal parts of serum, alcohol, and petroleum ether are shaken together and allowed to settle. The alcohol precipitates the protein and absorbs the bilirubin, and the lipochromes are absorbed into the petroleum ether.

A patient who consumes large quantities of foods containing high levels of carotene for a period of six months or more may develop this condition. Carrots are probably the food most apt to be involved. The daily requirement for carotene by an adult is about 5000 units. A ¼ lb. of carrots contains about 2000 units of carotene.

BOOK REVIEWS

Colloid Science. James W. McBain, Reinhold Publishing Corporation, New York, 1950. 450 pp. Price $8.00.

This work has been developed by an outstanding pioneer in the researches of colloid science. The author, in a very readable manner, superimposes the recent laws of colloid science upon the already established general laws of physics and chemistry. There is an attempt throughout the entire text to illustrate practical applications for the phenomena discussed.

The text consists of twenty-seven chapters, in which is included discussions of the most recent developments in the fields of resins, plastics, clays and aerosols.

There are excellent references at the end of each chapter. At the end of the book is an author index, a chemical and compound index and a detailed subject index.

The book is written in a most challenging manner; indeed it stimulates its reader to "run to the laboratory and wet his hands". It is recommended to students in the field of colloid chemistry and to those interested in utilizing concepts of colloid chemistry in their researches.

Martin Barr

Laboratory Manual for Pharmacognosy, Second Edition. Edward P. Claus, Professor of Pharmacognosy, University of Pittsburgh College of Pharmacy. 111 pages of Laboratory Directions including the index, 100 detachable sheets with printed headings for recording the laboratory exercises. Paper bound, 8½ by 11, the C. B. Mosby Co., St. Louis, 1950. Price $3.25.

The author states in the preface that the Manual was prepared to present material based on the biochemical classification suggested in the report of the Pharmaceutical Survey entitled: *Pharmacognosy in the Pharmaceutical Curriculum.* This report states in part: "It is no longer necessary to make expert plant anatomists out of undergraduate

pharmacy students through courses in Pharmacognosy. . . . A knowledge of the chemical constituents and the action of drugs should be stressed, and limitations should be placed on the study of origin and anatomy of drug plants." The manual is an attempt to satisfy these statements.

The text of the Manual provides very limited directions for the study and indentification of crude drugs containing Carbohydrates, Glycosides, Neutral Principles, Tannins, Fixed Oils, Fats and Waxes, Volatile Oils, Resins, Alkaloids, Vitamins and Hormones. An Appendix (Page 86 to 111) includes a brief outline of plant tissues, microchemical procedures and a list of laboratory apparatus and supplies. Noticeably absent from the Manual are directions for the study of sources of insecticides and antibiotics.

In the opinion of the reviewer the manual is over-simplified and does not provide sufficient material for a basic laboratory course. However, it is entirely suitable for the teacher or student whose interest lies in a brief survey.

E. H. MacLaughlin

Antipyrine: A Critical Bibliographic Review. By Leon A. Greenberg; 135 pages; 1950. Hillhouse Press, New Haven. Price, $4.00.

This book, the third in a series of Monographs of the Institute for the Study of Analgesic and Sedative Drugs, is a critical review of the extensive literature on a commonly used preparation such as antipyrine formerly was.

The author presents the available data on the analgesic antipyretice effects of antipyrine. He includes all the information related to agranulocytosis and also concerning antipyrine poisoning. He finds in the literature that there are very few cases of poisoning due to antipyrine and even those few, in some instances, can be questioned.

The following is the conclusion reached: "Today, it (antipyrine) is rather infrequently prescribed although there is no justification for this disuse in the experimental or clinical literature. The present neglect of antipyrine as an effective analgesic appears to represent merely a vagary of fashion—perhaps occasioned by the popularity of salicylates."

Marvin A. Gershenfeld, M. D.

Metabolic Methods—Clinical Procedures in the Study of Metabolic Functions. C. Frank Consolazio, Robert E. Johnson, and Evelyn Marek; 471 pages; 1951. The C. V. Mosby Company, St. Louis. Price, $6.75.

This book presents the methods which the authors during their years of experience, particularly at the Medical Nutrition Laboratory in Chicago, have found to be useful in routine laboratory procedures in metabolic studies. The authors have not attempted to reduplicate detailed instruction for the usual laboratory procedures, but have concentrated on the less commonly used methods such as spectrophotometry, flame photometry and biochemical analyses for proteins, nitrogen compounds, carbohydrates, fats, and vitamins. A section of the book is devoted to gases including measurement of gases in the blood and expired air.

This volume is very simply written. Each procedure has the reference stated, followed by the principle of the test. A list of the required apparatus and reagents is included. Then, the procedure is given step by step with the necessary calculations and an example of the calculations. Where necessary, precautions are also included.

Because of the simplicity of presentation, the book is recommended for instructional purposes and for the casual worker in the field of metabolic studies. Its extensive bibliography, which attempts to refer to all useful methods, makes it a worthwhile addition to the library of all workers interested in mammalian metabolism.

Marvin A. Gershenfeld, M. D.

American Journal of Pharmacy

The American Journal of Pharmacy is the oldest continuously published scientific periodical of its kind in America, having been established by the Philadelphia College of Pharmacy in 1825. After the original issue there were three other preliminary numbers until 1829, when regular publication began. From then until 1852 four issues were published annually, with the single exception of 1847, when an additional number appeared. Six issues a year were printed from 1853 to 1870, at which time the Journal became a monthly publication.

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